

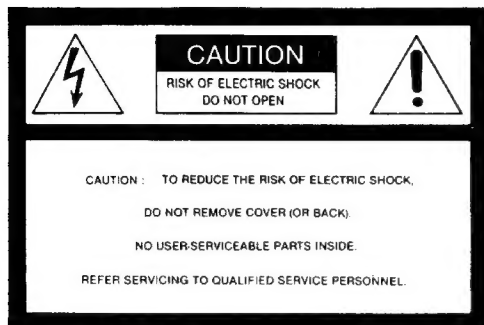
Stereo Cassette Deck

Operating Instructions

TC-WR520
TC-W320
TC-WR520S
TC-W320S

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

*The graphical symbols are on the rear enclosure.

INFORMATION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna

- Relocate the equipment with respect to the receiver

- Move the equipment away from the receiver

- Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems".

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

Owner's Record

The model and serial numbers are located at the rear. Record them in the spaces provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. _____ Serial No. _____

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Features

- **Double deck:** deck A for playback and deck B for recording/playback.
- **B and C type Dolby NR* systems** to reduce tape hiss noise.
- **Synchro dubbing** at normal or high (double) speed.
- **AMS function** which provides easy access to a desired selection.

* Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
 "DOLBY" and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

Differences between the models

This instruction manual covers the TC-WR520, TC-W320, TC-WR520S and TC-W320S. The TC-WR520 and the TC-WR520S have the following features which are not found in the TC-W320 or the TC-W320S:

- Bidirectional tape movement
- Auto reverse

Precautions

On safety

- Operate the unit only on 120 V AC, 60Hz.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it will not be used for a long time. To disconnect the cord, pull it out by grasping the plug. Never pull the cord itself.

On operation

- When the unit is not used, turn the power off to conserve energy and to extend the useful life of your unit.
- Because of the safety mechanism, the function buttons will not operate if:
 - the cassette holder is not completely closed
 - there is no cassette
 - a cassette has been incorrectly inserted into the cassette holder

On head cleaning

The head and tape path should be cleaned after every 10 hours of operation. Dirty heads and a dirty tape path may cause:

- Loss of high-frequency response
- Loss of sound volume
- Sound drop-out

Note on cassettes longer than 90 minutes

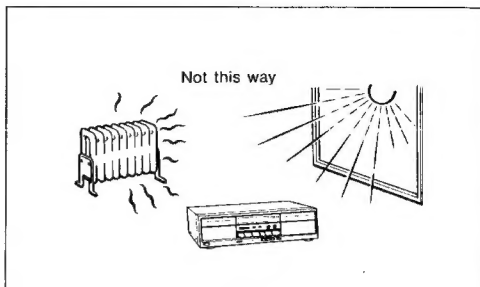
The use of cassettes longer than 90 minutes is not recommended except for long continuous playback.

For detailed safety precautions, see the leaflet "IMPORTANT SAFEGUARDS".

If you have any questions or problems concerning your unit, please contact your nearest Sony dealer.

Installation

Notes on Installation

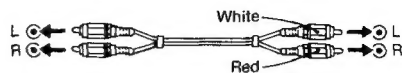


- Place the unit with the front panel facing toward you in a location with adequate air circulation to prevent internal heat build-up in the unit.
- Do not install the unit:
 - near heat sources such as radiators or air ducts.
 - in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
 - in an inclined position.
 - on a soft surface, such as a rug, that would block the ventilation holes on the bottom.
- Do not throw away the carton and packing material. They will come in handy when transporting the unit or shipping it for servicing.

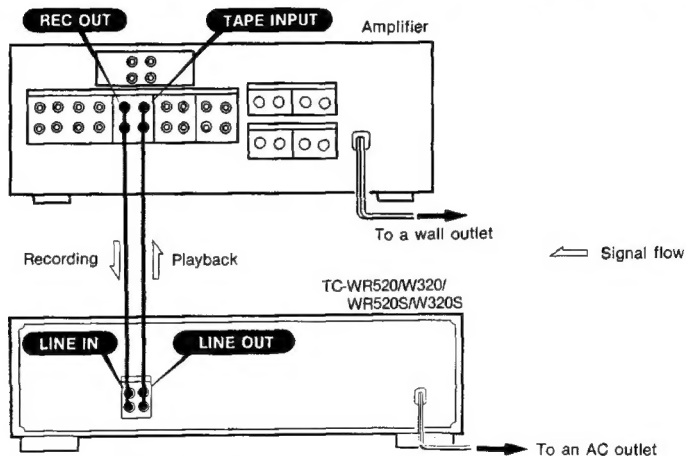
Connections

Notes on Connections

- Turn off the power to all equipment before making any connection.
- Note that the red plug of the supplied connecting cord is for right-channel (R) connection and the white plug for left-channel (L) connection.
- The connecting cords should be fully inserted into the jacks. A loose connection may cause hum pickup.

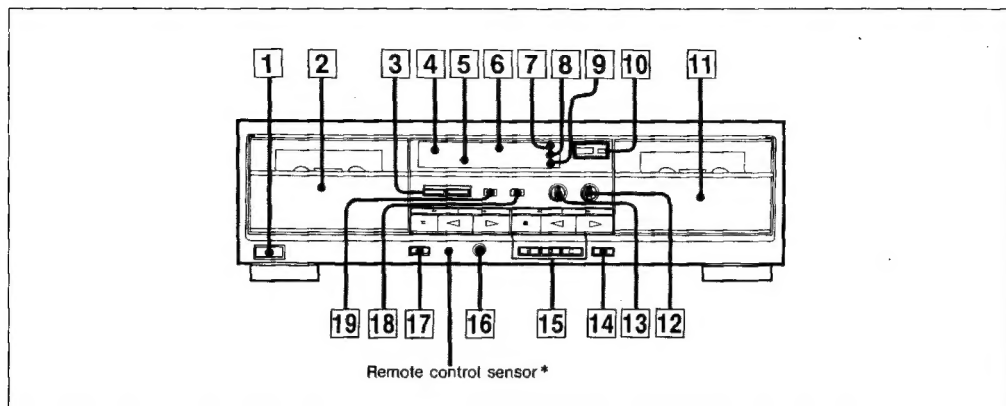


Connecting Diagram



Identification of Front Panel Parts



Refer to the pages indicated in ● for details.



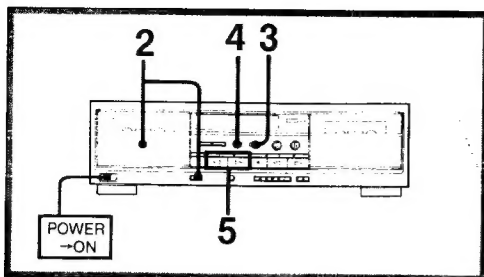
- | | |
|--|---|
| <p>1 POWER switch</p> <p>2 Cassette holder (deck A)</p> <p>3 SYNCHRO DUBBING buttons
HIGH SPEED button/NORM (normal) SPEED button ⑫ ⑬</p> <p>4 PLAY and ◀▶ Direction indicators (deck A)</p> <p>5 Peak level meter ⑪</p> <p>6 SYNCHRO DUBBING indicators</p> <p>7 PLAY and ◀▶ Direction indicators (deck B)</p> <p>8 Pause indicator</p> <p>9 REC (recording) indicator</p> <p>10 Tape COUNTER and RESET button</p> <p>11 Cassette holder (deck B)</p> <p>12 REC (recording) LEVEL control ⑪</p> <p>13 BALANCE control</p> | <p>14 ▲ (eject) button (deck B)</p> <p>15 Tape operation buttons
■ (stop) button
◀ (reverse play) button (TC-WR520/WR520S only)
▶ (forward play) button
▶▶ (right fast winding) button
◀◀ (left fast winding) button
● REC (recording) button (deck B only) ⑩
○ REC MUTE (recording muting) button (deck B only) ⑩
 PAUSE button (deck B only)</p> <p>16 PHONES (headphones) jack (stereo phone jack)</p> <p>17 ▲ (eject) button (deck A)</p> <p>18 □□ NR (Dolby noise reduction) switch ⑩</p> <p>19 DIR (direction) MODE switch (TC-WR520/WR520S only) ⑦</p> |
|--|---|

* Remote control sensor

You can remotely control this cassette deck with:

- A remote commander that has an  mark and comes with a Sony amplifier or receiver and which can be used to control a cassette deck.
- An optional Sony remote commander that has an  mark.

Playing Back a Tape (on deck A or B)



1 Turn on the amplifier and select the tape function.

2



3

Set the ☐ (Dolby) NR switch to the same position that was used when the cassette was recorded.

Dolby NR system	Switch setting
B type	
C type	
OFF	

4

Select the direction mode. (TC-WR520/WR520S only)

To play back one side	
To play back both sides continuously*	

* After playing back five times, the deck automatically stops.

5

From the front side	
From the reverse side (TC-WR520/WR520S only)	

To stop playback, press ■.

To stop for a moment during play, press ■ (only on deck B).

To restart play, press ■ again.

To fastwind a tape rightward, press ►►.

To fastwind a tape leftward, press ◄◄.

Knowing which cassette side is being played back (TC-WR520/WR520S only)

A direction indicator in the display ◄ or ► illuminates to indicate the side of the cassette being played back or recorded.

When both decks A and B are in playback mode

Only playback from deck A will be audible.

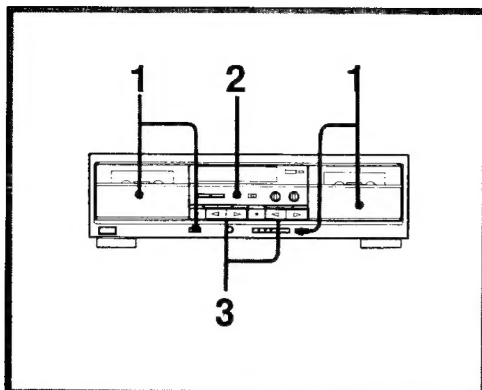
What is the Dolby NR system?

The Dolby NR (noise reduction) system reduces tape hiss noise in low-level, high-frequency signals by boosting the signals during recording and then lowering them during playback.

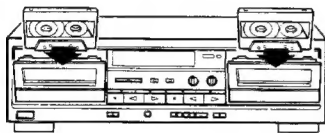
Is it necessary to set the tape type being used?

No. The deck has an automatic tape type detection system. Of the four major types of tapes, your unit can use TYPE I (normal), TYPE II (CrO₂) and IV (metal). The tape detection system automatically adjusts the equalization and bias current to the optimum level for the type of cassette detected.

Playing Back Both Decks in Succession (from Deck A to B or Vice Versa)—Relay Play



1



2

TC-WR520/WR520S only



3

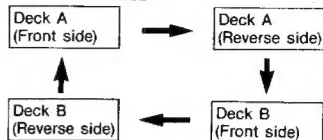
From the front side	
From the reverse side (TC-WR520/WR520S only)	

To stop relay play, press ■ of the deck playing.

Playback sequence of relay play

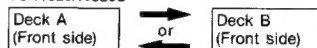
Relay play follows the sequence below regardless of where playback starts.

TC-WR520/WR520S



After playing back five times the deck automatically stops.

TC-W320/W320S

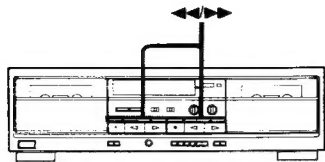


To play back more than two cassettes in succession

Replacing cassettes that have finished playing with new ones allows you to play back two or more cassettes alternately on each deck.

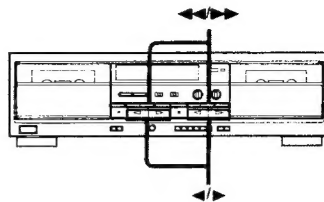
Locating the Beginning of a Selection—Automatic Music Sensor (AMS)

Starting Playback Automatically After Fast Winding—Auto Play



During playback press ►► or ◀◀ referring to the following table.

Cassette side	Desired selection	
	Next selection	Selection being played
Front	►►	◀◀
Reverse (TC-WR520/ WR520S only)	◀◀	►►



From the beginning of the front side, press ◀◀ while holding down ►.

From the beginning of the reverse side, press ►► while holding down ◀. (TC-WR520/WR520S only)

What is the AMS?

It detects the blank space between selections and locates the beginning of a selection during playback. To ensure correct operation of the AMS, there must be a blank of 4 seconds or longer between selections.

If the ►► or ◀◀ button is pressed immediately before the following selection.

The AMS may locate the selection after the one immediately following.

The AMS will treat the following as blanks:

- a long pause in the music
- a passage of low frequencies or very low volume
- a passage of gradual increase or decrease of volume

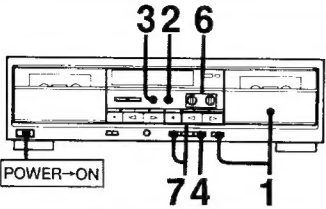
The AMS does not function on both decks simultaneously


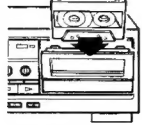
- The AMS is activated for the deck whose ►► or ◀◀ button is pressed first.
- If the AMS is activated for deck B during playback on deck A, deck B fast winds to the beginning of the selection and stops.
- If the AMS is activated for deck A during playback on deck B, deck A fast winds to the beginning of the selection and begins playback. The sound from deck B will be cut off when playback begins on deck A.

The AMS may not operate


- If there is noise in the space between selections.
- If the space is less than 4 seconds long.

Recording a Tape (Only on Deck B)






1  

2 Select the Dolby NR setting.





3 Select the side(s) to be recorded. (TC-WR520/WR520S only)

To record on one side	
To record on both sides	

4  The unit will enter recording pause mode.

5 Play the program source to be recorded.

6 Adjust the recording level and balance.

See Adjusting the Recording Level on page 11.

7 • TC-WR520/WR520S

To record on the front side of the cassette

When ► is on	Press ► once or
When ◀ is on	Press ► twice

To record on the reverse side of the cassette

When ◀ is on	Press ◀ once or
When ► is on	Press ◀ twice

• TC-W320/W320S

Press ► or ||.

To stop recording, press ■.

The ◀► direction indicator blinks when ● is pressed (TC-WR520/WR520S only)

Recording is possible only on side(s) indicated by a blinking indicator. If a cassette tab has been removed to prevent accidental erasure, the indicator for that side will not blink.

If the side whose tab has been removed is selected for recording

The deck will start playback instead of recording.

Note

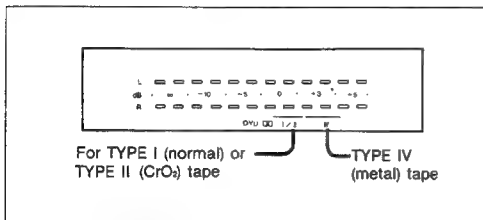
Playback from deck A is not audible while deck B is recording.

Adjusting the Recording Level

The optimum recording level, which differs according to the tape type, is indicated on the **PEAK LEVEL METER** for each tape type.

Adjust the **REC LEVEL** control as high as possible without exceeding the recommended range for the tape type being used.

Recommended maximum **PEAK LEVEL METER** reading



If the recording level frequently exceeds the range for the tape type, the level is too high.

Tips on recording level adjustment

- If the recording level setting is too high, the recording will be distorted; if it is too low, the tape will produce a hissing sound. Therefore, the recording level should be set as high as possible without causing distortion.
- If the program source to be recorded has many high frequency signals, set the level to a relatively low position.

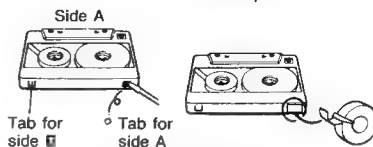
Notes on Cassettes

To protect a recording on side A or B

Break out the respective tab.

To recover a cassette for recording

Cover the respective slot with tape.



When using TYPE II (CrO₂) or TYPE IV (metal) cassettes

Be careful not to cover the detector slots which are necessary for automatic tape type detection.

TYPE II (CrO₂)



Detector slots

TYPE IV (metal)



Detector slots

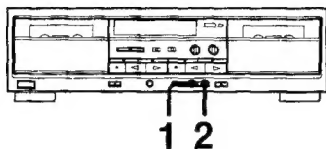
Cassette care

- Avoid touching the tape surface of a cassette, as any dirt or dust will contaminate the heads.
- Keep cassettes away from equipment with magnets, such as speakers and amplifiers, as erasure or distortion on the recorded tape could occur.
- Do not expose cassettes to direct sunlight, extremely cold temperature or moisture.

Inserting a Blank Space During Recording

—Record Muting

Using the **O** button during recording, you can insert a blank space on the tape to help you locate a selection (AMS function, see page 9). In addition, this function enables you to eliminate unwanted input by replacing it with a blank space.



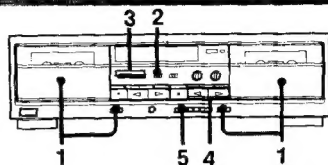
1 While recording, press **O**.

- If you want the blank to be four seconds long, press and release the button immediately. The REC indicator will flicker and no incoming signals will be recorded on the tape. After four seconds, the tape will pause automatically and the **II** indicator will light up.
- If you want the blank to be longer, keep pressing for as long as you want. After four seconds, the REC indicator flickers more rapidly. When you release **O**, the unit goes into the pause mode.

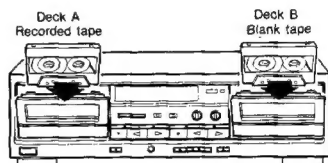
2 Press **II** to resume recording.

Dubbing a Tape (from Deck A to B)

High-speed dubbing allows you to dub a tape on deck A to a tape on deck B without any adjustments. High-speed dubbing is convenient for dubbing entire tapes while normal-speed dubbing is handy for tape editing.



1



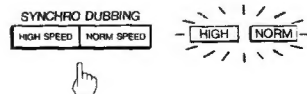
2

Select the direction mode (TC-WR520/WR520S only).

One side	
Both sides	<p>Dubbing of the reverse side starts independently of deck A.</p>
	<p>Dubbing of the reverse sides starts simultaneously with deck A.</p>

3

Select dubbing speed.



Dubbing only Desired Portions

4 Select the side on which to start dubbing.

From the front side



From the reverse side (TC-WR520/WR520S only)



5 To start dubbing

Deck B

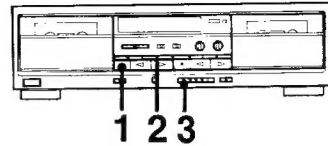


To stop dubbing

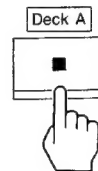
During normal-speed dubbing, press ■ on deck B.

During high-speed dubbing, press ■ on either deck A or B.

Possible only during normal-speed dubbing.



1 During normal-speed dubbing, press ■ on deck A at the portion to be skipped.

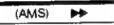


Deck B goes into the recording pause mode.

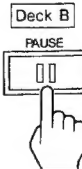
2 Locate the desired portion.



or



3 To resume dubbing



Is it necessary to adjust the recording level and select the Dolby NR system?

No, because the tape in deck B is recorded with the same recording level and Dolby noise reduction system as the original tape in deck A.

During high-speed dubbing

Only the ■ button is operative.

If the HIGH or NORM indicator blinks three times

The tab(s) of the cassette inserted into deck B has (have) been removed. Dubbing is not possible on that cassette. Cover the slot(s) with plastic tape (see page 11).

Maintenance

Cleaning the Heads and Tape Path (both decks)

Clean all surfaces over which the tape travels after every 10 hours of operation.

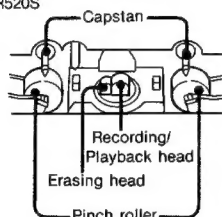
Otherwise, the following symptoms might appear.

- low-quality sound
- a decrease in sound level
- excessive wow, flutter or dropout
- incomplete erasure
- recording cannot be made

To obtain high-quality recorded sound, cleaning before every recording is recommended.

Wipe the heads, the pinch rollers and the capstans with a cleaning tip slightly moistened with tape cleaning fluid or alcohol.
TC-WR520/WR520S

Deck B



Demagnetizing the Heads (both decks)

After 20 to 30 hours of use, or when you notice hiss and/or loss of high frequencies, the residual magnetism built up on the heads should be removed.

- 1 Turn off the power.
- 2 Demagnetize the heads with any commercially available demagnetizer.
Refer to the instruction manual of the demagnetizer for detailed instructions.

Cleaning the Cabinet

Clean the cabinet, panel and controls with a soft cloth slightly moistened with a mild detergent solution.

Important

Do not use any type of abrasive pad, scouring powder or solvents such as alcohol or benzene.

Specifications

Recording system 4-track 2-channel stereo

Fast-forward and rewind time

Approx. 90 sec. (with HF-60 cassette)

Bias AC bias

Signal-to-noise ratio (NAB, at peak level)

Dolby NR switch Cassette	OFF	B-TYPE ON	C-TYPE ON
TYPE IV (Sony METAL-ES)	58 dB	66 dB	73 dB
TYPE II (Sony UX-S)	57 dB	65 dB	72 dB
TYPE I (Sony HF-S)	55 dB	63 dB	70 dB

Total harmonic distortion

1.0% (with Sony METAL-ES cassette)

Frequency response (Dolby NR off)

TYPE IV cassette (Sony METAL-ES)	30–15,000 Hz (± 3 dB) 30–13,000 Hz (0VU recording)
TYPE II cassette (Sony UX-S)	30–15,000 Hz (± 3 dB)
TYPE I cassette (Sony HF-S)	30–14,000 Hz (± 3 dB)

Wow and flutter 0.09% WRMS (NAB)

Inputs

Line inputs (phono jacks)	Sensitivity	77.5 mV (-20 dB)
	Input impedance	50 kohms

Outputs

Line outputs (phono jacks)	Rated output level	0.44 V (-5 dB) at a load impedance 47 kohms
	Load impedance	Over 10 kohms
Headphones (stereo phone jack)	Output level	0.3 mW at a load impedance of 32 ohms

General

Power requirements 120 V AC, 60 Hz

Power consumption 23 W

Dimensions Approx. 430 × 125 × 285 mm (w/h/d)
(17 × 5 × 11 1/4 inches)
including projecting parts and
controls

Weight Approx. 4.5 kg (9 lbs 15 oz)

Supplied accessory

Audio connecting cord (2)


Design and specifications subject to change without notice.







Troubleshooting Guide

The following trouble checks will help you correct the most common problems encountered with your tape deck. Should any problems persist after you have made these checks, consult your nearest Sony dealer.

Before proceeding with these trouble checks, first check these basic points:

- The power cord is firmly connected.
- Amplifier connections are firmly made.
- Heads, capstans and pinch rollers are clean.
- The amplifier controls and switches are set correctly.

Function buttons and tape transport problems		
Symptom	Cause	Remedy
Function buttons do not activate.	Cassette holder is not fully closed.	Close the holder completely.
The  eject button does not function.	This occurs when there is a power failure or when the power cord is disconnected during playback or recording.	Turn on the power once more.
● button does not activate.	No cassette in the holder.	Insert a cassette.
	Tab has been removed from the cassette.	Cover the hole with plastic tape (page 11).
Automatic shut-off mechanism activates before the tape comes to its end.	Tape is slack.	Take up the tape slack.
	Cassette shell is deformed.	Use another cassette.
	The inside of the cassette holder is illuminated by strong light.	Remove the light source.
Excessively loud tape transport noise during fast winding.	This depends on the cassette used and is not a problem.	—

Recording and playback problems		
Symptom	Cause	Remedy
Auto reverse function does not operate.	Direction mode switch is set to  .	Set direction mode switch to  .
Recording or playback cannot be made or there is a decrease in sound level.	Recording/playback and erasing heads are either dirty or magnetized.	Clean or demagnetize the heads.
	Improper connection.	Make connections properly (page 5).
	Improper setting of the amplifier controls.	Set the amplifier controls to the appropriate positions.
Excessive wow, flutter or dropout.	Head, capstan or pinch roller is dirty.	Clean in accordance with instructions shown on page 14.
Incomplete erasure.	Erasing head is dirty.	Clean the erasing head.
Increased noise or poor reproduction in high frequencies.	Head is magnetized.	Demagnetize the head.
Unbalanced tone in high frequencies.	Improper setting of the Dolby NR switch.	When playing back, set the switch to the same position used in recording.
	The unit is placed near a television set	Move the unit away from the television set.
The desired selection cannot be located even though you activate the AMS.	There is noise in the space between selections.	Record the tape if you can, and insert a blank space of 4 seconds using the  button.
	The space is less than 4 seconds long.	Press  to insert a long space.
Playback or fast-winding may begin in the middle of the selection when AMS is activated.	The selection contains one of the following: — a long pause in the music — a passage of low frequencies or very low volume — a gradual increase or decrease of volume	Press the  or  button again.

Noise		
Symptom	Cause	Remedy
Hum noise.	The unit is stacked on or under the amplifier.	Separate the unit.
Noise is recorded.	Recording was made near equipment such as a television set or a color monitor, and interference has affected the recording on the tape and the Dolby NR system.	Move the unit away from the television set or color monitor.